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TO STUDY THE PRESENCE OF INSECTICIDES AND PESTICIDES IN VARIOUS TYPES OF FRUITS AND VEGETABLES IN TQ-JALGAON JAMOD

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Abstract: A samples of oranges, guava and spinach were purchased from the local markets of Jalgaon Jamod. Pesticides are generally used in agriculture mostly to increase crop yields to cater enormous supply of food products for increasing world population as well as to protect crops from pests and control insect-borne diseases. Increased use of pesticides results in contamination of the environment and the excess accumulation of pesticide residues in food products, which has always been a matter of serious concern. The consumer survey has showed that more than two-thirds of the consumers believe that fresh vegetables contain pesticide residues, and close to 80 per cent catch that the pesticide residues would have severe health implications.Generally chemicals which are sprayed over crop to protect it from pests. For example: DDT, BHC, zinc phosphide, Mercuric chloride, dinitrophenol, etc. All pesticides are poisonous chemicals and are used. Pesticides are recognized to be effective against variety of insects, weeds and fungi and are respectively called insecticides, herbicides and fungicides. Most of the pesticides are non-biodegradable and remain penetrated as such into plants, fruits and vegetables. From plants they transfer to animals, birds and human beings who eat these polluted fruits and vegetables. Inside the body they get accumulated and cause serious health problems. These days preference is given to biodegradable insecticides like Malathion. The presence of insecticides residues in even raw samples of wheat, fish, meat, butter etc. have aroused the concern of agricultural administrators, scientists and health officials all over the world to put a check over the use of insecticides and to search for non insecticidal means of pest control.

Keywords: Insecticides, pesticides, Fruits, vegetables. Hazards; Human health.

Introduction

The word pesticide covers a wide variety of compounds including insecticides, fungicides, herbicides, rodenticides, molluscicides, nematicides, plant growth regulators and others[1].Pesticides are very hazardous and lethal for organisms as well as for humans. They present danger to consumers, bystanders and workers

during manufacture, transport or, during and after use. Pesticides are also toxic to plants and many food crops, including fruits and vegetables, contain pesticide residues after being washed or peeled Pesticides decrease the biodiversity in soil and it has been found that the quality of soil is higher in the absence of pesticides with the additional effect of higher water retention[2].

A number of pesticides are highly toxic and even in very small quantities these pesticides can result in the death of humans and animals, while exposure to a sufficient amount of almost any pesticide can initiate long-term illness. Statistics show a 70 % increase in the risk of developing Parkinson's disease for individuals exposed to low levels of pesticides[3]. Long-term health problems such as respiratory, memory disorders dermatological conditions[4,5], cancer[6], depression, neurological deficiencies[7,8] miscarriages and birth defects[9] have been known to be associated with pesticide exposure. Depending upon the duration of exposure of pesticides, short term adverse, acute and chronic health effects can occur. Acute health effects include stinging eyes, rashes, blisters blindness, nausea, dizziness, diarrhea and death, whereas chronic health effects include infertility, developmental toxicity, immune toxicity and disruption of the endocrine system.

Materials required:

Mortar and pestle, Beakers, Funnel, Glass rod, Filter paper, China dish, Water bath, Tripod stand, Fusion tube, Knife, Test tube

Requirements:

Samples of various fruits and vegetables, Alcohol, Sodium Metal, Ferric Chloride, Ferrous Sulphate Crystals, Distilled Water and Dil. Sulphuric Acid

Theory

Nitrogen present in organic compounds is detected by “Lassssaiigne’’ss Tesstt”.. The elements present in the compound are converted from covalent form into the ionic form by fusing the compound with sodium metal. Following reaction take place:

$$Na + C + N \xrightarrow{\triangle} NaCN$$

(Sodium cyanide)

Cyanide of sodium so formed on sodium fusion is extracted from the fused mass by boiling it with distilled water. This extract is known as sodium fusion extract.

Procedure

1) Take different types of fruits and vegetables and cut them into small pieces separately.

2) Transfer the cut pieces of various fruits and vegetables into it separately and crush them.

3) Take different kinds for each kind of fruits and vegetables and place the crushed fruits and vegetables in these beakers and add 100 ml of alcohol to each of these.

4) Stir well and filter.

5) Collect the filtrate in separate china dishes, evaporate the alcohol by heating the china dishes one by one over a water bath and let the residue dry in the oven.

6) Heat a small piece of sodium in a fusion tube, till it melts.

7) Then add one of the above residues from the china dish to this fusion tube and heat it till red hot.

8) Drop the hot fusion tube in a china dish containing about 10 ml of distilled water.

9) Break the tube and boil the contents of the china dish for about 5 minutes.

10) Cool and filter the solution.

11) Collect the filtrate.

12) To the filtrate add 1 ml of freshly prepared ferrous sulphate solution and warm the contents.

13) Then add 2-3 drops of ferric chloride solution and acidify with dilute HCl.

14) If a blue or green ppt. or coloration is obtained it indicates the presence of nitrogen containing insecticides.

15) Repeat the test of nitrogen for residues obtained from other fruits and vegetables and record the observation.

Observations

Sr.No	NAME OF THE FRUIY AND VEGETABLES	TEST FOR THE PRESENCE OF NITROGEN	PRESENCE OF INSECTICIDE OR PESTICIDE RESIDUES
1	Apple	Positive	Yes
2	Banana	Positive	Yes
3	Potato	Positive	Yes
4	Mango	Positive	Yes
5	Grapes	Positive	Yes
6	Pomegranate	Positive	Yes
7	Avocado	Positive	Yes
8	Papaya	Positive	Yes
9	Chikoo	Positive	Yes
10	Strawberry	Positive	Yes
11	Lime	Positive	Yes

12	Tamarind	Positive	Yes
13	Carrot	Positive	Yes
14	Radish	Positive	Yes
15	Tomato	Positive	Yes
16	Brinjal	Positive	Yes
17	Cabbage	Positive	Yes
18	Lady finger	Positive	Yes
19	Onion	Positive	Yes
20	Peas	Positive	Yes
21	Garlic	Positive	Yes
22	Cauliflower	Positive	Yes
23	Cucumber	Positive	Yes
24	Sweet potato	Positive	Yes
25	Bitter gourd	Positive	Yes

Conclusion

It is concluded that from the above observations, that each fruit or vegetable contains nitrogenous insecticide or pesticide residues in it.

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